

AMENDMENTS TO THE CLAIMS

Please amend Claims 1-5 and 7-20 and add new Claims 21-28 as shown below. This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A visualization system for a computer system ~~includes~~comprising:

a positioning portion configured to determine a position of a viewer with respect to ~~a virtual geographic location~~a real world and a position of the viewer with respect to a virtual world, the positioning portion configured to allow the viewer to interact with the virtual world;

a modeling portion configured to specify the virtual ~~geographic location~~world in response to a ~~three-dimensional~~ model of the virtual ~~geographic location~~world;

a model specification portion configured to specify a representation of satellite status data in response to the position of the viewer with respect to the virtual ~~geographic location~~world and in response to the satellite status data; and

a ~~three-dimensional~~an output portion configured to provide ~~at least two images of the virtual geographic location and~~an image of the virtual world super-imposed on an image of the real world, the image of the virtual world including the representation of the satellite status data to the viewer in response to the position of the viewer with respect to the virtual ~~geographic location~~world.

2. (Currently Amended) The visualization system of claim 1 wherein the positioning portion comprises:

an image acquisition source configured to capture at least an image comprising an image of ~~a physical location~~ the real world, and an image of at least a pre-determined marker positioned in the real world;

an image processing portion configured to determine the position of the viewer ~~in~~ with respect to the physical location real world in response to the image of the pre-determined marker; and

a virtual positioning portion configured to translate the position of the viewer in the ~~physical location~~ the real world to the position of the viewer in the virtual ~~geographic~~ location world.

3. (Currently Amended) The visualization system of claim 1 wherein the ~~three-dimensional model comprises a VRML model~~ of the virtual world is a multi-dimensional model of the virtual world, and the output portion is a multi-dimensional output portion.

4. (Currently Amended) The visualization system of claim 1 wherein the representation of the satellite status data comprises a representation ~~of~~ selected from the group: satellite orbit, historical position, current position, future predicted position, object trajectory, ground coverage, direction a current position of a satellite, a past position of a satellite, a future position of a satellite, an orientation of a satellite, ground coverage of a satellite, a trajectory of a satellite, satellite sensor orientation, satellite sensor position, a satellite's orientation vectors to other satellites or objects, a satellite's coverage analysis when the satellite is in a view of a region,

satellite revisit time, a satellite communication link or network, beam strength of space, satellite systems status, and satellite system design data.

5. (Currently Amended) The visualization system of claim 21 wherein the ~~three-dimensional~~ output portion comprises a heads-up pair of glasses.

6. (Original) The visualization system of claim 2 wherein the image acquisition source is physically coupled to the heads-up pair of glasses.

7. (Currently Amended) The visualization system of claim 5 wherein the ~~head~~heads-up pair of glasses are also configured to allow the viewer to view the ~~physical location~~image of the virtual world super-imposed on the image of the real world.

8. (Currently Amended) A method for ~~a computer system~~ comprises: visualization of augmented reality, the method comprising:

determining a position of a viewer with respect to a real world and a position of the viewer with respect to a virtual world ~~geographic location;~~

determining a model of the virtual world ~~geographic location in response to a three-dimensional model of the virtual geographic location;~~

determining a representation of satellite status data in response to the position of the viewer with respect to the virtual ~~geographic location~~world and in response to the satellite status data; and

displaying to the viewer a ~~three-dimensional~~ representation of the virtual world super-imposed on a representation of the real world ~~geographic location and, the representation of~~

the virtual world including the representation of the satellite status data in response to the position of the viewer with respect to the virtual world-geographic location.

9. (Currently Amended) The method of claim 8 wherein the step of determining the position of the viewer comprises:

~~capturing with a video camera an image comprising a physical location with~~ of at
least one pre-determined marker positioned in the real world;

~~determining a position and orientation of the viewer in the physical location with~~
respect to the real world in response to the image; and of the pre-determined marker; and

~~determining the position of the viewer in the virtual geographic location in~~
~~response to the position and orientation of the viewer in the physical location with respect to the~~
virtual world in response to determining the position and orientation of the viewer with respect to
the real world.

10. (Currently Amended) The method of claim 8 wherein ~~the three~~ model of the
virtual world is a multi-dimensional model comprises a VRML model of the virtual world, and the
representation of the virtual world is a multi-dimensional representation of the virtual world.

11. (Currently Amended) The method of claim 8 wherein the satellite status
data comprises data selected from the group: satellite orbit, ~~historical position, current position,~~
~~future predicted position, object trajectory, ground coverage, direction, status~~ a current position of
a satellite, a past position of a satellite, a future position of a satellite, an orientation of a satellite,
ground coverage of a satellite, a trajectory of a satellite, satellite sensor orientation, satellite sensor
position, a satellite's orientation vectors to other satellites or objects, a satellite's coverage analysis

when the satellite is in a view of a region, satellite revisit time, a satellite communication link or network, beam strength of space, satellite systems status, and satellite system design data.

12. (Currently Amended) The method of claim 9~~8~~ wherein the step of displaying the three-dimensional representation comprises displaying a ~~first and a second image~~the representation of the real world and the representation of the virtual world to the viewer with a pair of heads-up glasses.

13. (Currently Amended) The method of claim 9 wherein the step of capturing the image of the pre-determined marker uses a video camera, and the video camera is disposed upon the pair of head-up glasses.

14. (Currently Amended) The method of claim ~~12~~8 wherein the viewer views the ~~physical location~~representation of the real world at the same time as the ~~three-dimensional representation of the virtual geographic location~~world.

15. (Currently Amended) A visualization method for a computer system ~~comprises~~comprising:

displaying to a viewer a ~~three-dimensional representation of a virtual location, real world overlaid with~~ a representation of ~~the~~a virtual world, the representation of the virtual world including satellite status data ~~as overlays on a physical location~~;

wherein the representation of the virtual ~~location~~world is determined in response to a model of the virtual ~~location~~world, and in response to a position of the viewer with respect to the ~~model of the virtual location; and~~virtual world.

wherein the representation of the satellite status data is determined in response to satellite status data, and in response to a position of the viewer with respect to the ~~model of the virtual location~~virtual world, and

wherein the viewer is allowed to interact with the virtual world.

16. (Currently Amended) The visualization method of claim 15 wherein the position of the viewer with respect to the ~~model of the virtual location~~world is determined in response to an image of a pre-determined marker positioned in the ~~physical location~~real world taken from a vantage point of the viewer and in response to a correspondence between the virtual location~~world~~ and the ~~physical location~~real world.

17. (Currently Amended) The visualization method of claim 15 wherein the satellite status data comprises data selected from the group: satellite orbit, ~~historical position,~~ ~~current position,~~ ~~future predicted position,~~ ~~object trajectory,~~ ~~ground coverage,~~ ~~direction,~~ ~~status~~ a current position of a satellite, a past position of a satellite, a future position of a satellite, an orientation of a satellite, ground coverage of a satellite, a trajectory of a satellite, satellite sensor orientation, satellite sensor position, a satellite's orientation vectors to other satellites or objects, a satellite's coverage analysis when the satellite is in a view of a region, satellite revisit time, a satellite communication link or network, beam strength of space, satellite systems status, and satellite system design data.

18. (Currently Amended) The visualization method of claim 15 wherein the ~~three-dimensional representation of the virtual location comprises a first image and a second image~~world and the representation of the real world are provided to the viewer with a pair of heads-up display glasses.

19. (Currently Amended) The visualization method of claim 15 further comprising displaying ~~a selection of~~ to the viewer a portion of the virtual ~~location~~ world selected by the viewer to the viewer;

wherein the viewer selection is determined in response to a position of a viewer-controlled marker with respect to the ~~model of the virtual location~~ world, wherein the marker is positioned in the real world.

20. (Currently Amended) The visualization method of claim 19 wherein the step of displaying the selection to the viewer the portion of the virtual world selected by the viewer comprises overlaying an icon over the portion of the virtual ~~location~~ world displayed to the viewer.

21. (New) The visualization system of claim 1 wherein the image of the real world and the image of the virtual world are provided in real-time.

22. (New) The method of claim 8 wherein the step of displaying comprises displaying to the viewer in real time the representation of the real world and the representation of the virtual world.

23. (New) The visualization method of claim 15 wherein the step of displaying comprises displaying to the viewer in real time the representation of the real world overlaid with the representation of the virtual world.

24. (New) The visualization system of claim 1 wherein the viewer is allowed to perform one or more of the following: selecting a satellite, selecting an orbit, selecting a geographic area, or zooming-in or out of the virtual world.

25. (New) The visualization system of claim 1 wherein the viewer is allowed to directly select and manipulate objects in the virtual world without using a mouse.

26. (New) The visualization system of claim 1 wherein the positioning portion comprises a marker positioned in the real world, the marker is static or is placed upon a paddle that includes a pre-defined visual marker in the real world, and the paddle is capable of being moved around the real world.

27. (New) A visualization system for a computer system comprising:

a positioning portion configured to determine a position of a viewer with respect a real world and a position of the viewer with respect to a virtual world, the positioning portion configured to allow the viewer to interact with the virtual world;

a modeling portion configured to specify the virtual world in response to a model of the virtual world;

a model specification portion configured to specify a representation of object status data in response to the position of the viewer with respect to the virtual world and in response to the object status data; and

an output portion configured to provide an image of the virtual world super-imposed on an image of the real world, the image of the virtual world including the representation of the object status data to the viewer in response to the position of the viewer with respect to the virtual world.

28. (New) The visualization system of claim 27 wherein the representation of the object status data comprises a representation selected from the group: satellite orbit, a current position of a satellite, a past position of a satellite, a future position of a satellite, an orientation of a satellite, ground coverage of a satellite, a trajectory of a satellite, satellite sensor orientation, satellite sensor position, a satellite's orientation vectors to other satellites or objects, a satellite's coverage analysis when the satellite is in a view of a region, satellite revisit time, a satellite communication link or network, beam strength of space, missile threat clouds, beam strength of land based laser devices, satellite systems status, and satellite system design data.